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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,495	01/09/2007	Hiroki Matsuyama	925-341	1716
23117 7590 11/24/2008 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				
EXAMINER				
WATTS, ALAN B				
ART UNIT		PAPER NUMBER		
3656				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/578,495

**Applicant(s)**

MATSUYAMA ET AL.

**Examiner**

ALAN B. WAITS

**Art Unit**

3656

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 April 2008.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-15 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 05 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/CS-100)  
Paper No(s)/Mail Date 5/5/2006, 4/28/2008  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 recites the limitation "assuming". It is unclear what structure is assuming.

Claim 10 recites the limitation "the tapered raceway surface". There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 5, 8, 10, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Nunotani et al USP 4919551.

Nunotani disclose a similar device comprising:

Re clm 1:

- An inner ring (11, fig 1)
- An outer ring (12, fig 1)

- A plurality of rolling elements (13, fig 1) placed between the inner ring and the outer ring
- An oil inflow suppression member (24, 15, and 18, fig 1)

Re clm 2:

- Rolling elements are tapered rollers (fig 1)
- The inner ring is a rotating ring that has a tapered raceway surface (20, fig 1)
- The outer ring is a fixed ring that has a tapered raceway surface (21, fig 1)
- The inner ring has a flange portion (the bump on 11 to the left side of the roller 13, fig 1) brought in contact with minor diameter end surface of the tapered rollers
- The oil inflow suppression member is a shield plate (18, fig 1) having a protrusion that protrudes radially outwardly of the flange portion
- A retainer (17, fig 1) that retains the tapered rollers
- The protrusion is placed in a place having an interval from the retainer in an axial direction of the inner ring

Re clm 3:

- The protrusion has an outside diameter that is not greater than an inside diameter of an end portion on a minor diameter side of the tapered raceway surface of the outer ring (fig 1)

Re clm 5:

- The inner ring and the shield plate are integrally formed (fig 1)

Re clm 8:

- An oil outflow promotion structure (16, 19, 29, fig 1)

Re clm 10:

- The rolling elements are tapered rollers (fig 1)
- The oil outflow promotion structure comprises the tapered raceway surface of the outer ring set in contact with the tapered rollers at a contact angle of not smaller than 25 degrees (fig 1)

Re clm 11:

- A member (18, fig 1) that partially blocks an opening located between the inner ring and the outer ring on an oil inflow side
- A member (16, fig 1) that extends along an oil outflow direction on an oil outflow side

5. Claims 1, 8 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by JP2001140870.

JP'870 discloses a similar device comprising:

Re clm 1:

- An inner ring (11, fig 5)
- An outer ring (12, fig 5)
- A plurality of rolling elements (13, fig 5) placed between the inner ring and the outer ring
- An oil inflow suppression member (R, fig 5)

Re clm 8:

- An oil outflow promotion structure (S, fig 5)

Re clm 14:

- The rolling elements are balls (fig 5)
- The oil outflow promotion structure includes a portion of a shape that widens toward an oil outflow side in cross section on an inner peripheral surface of the outer ring (fig 5)

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nunotani et al. USP 4919551 as applied to claim 2 above.

Nunotani discloses all the claimed subject matter as described above.

Nunotani further discloses:

Re clm 4:

- A gap in the axial direction between the protrusion and the retainer (fig 1)

Nunotani does not disclose:

- Said gap being not greater than 3 mm

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide:

- Said gap being not greater than 3 mm

since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

8. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nunotani et al USP 4919551 as applied to claim 1 above.

Nunotani discloses all the claimed subject matter as described above.

Re clm 6, Nunotani further discloses:

- The rolling elements are tapered rollers (fig 1)
- The inner ring is a rotating ring that has a tapered raceway surface (20, fig 1)
- The outer ring is a fixed ring that has a tapered raceway surface (21, fig 1)
- The oil inflow suppression member is a shield plate (18, fig 1) having a protrusion of an end portion on a minor diameter side of the tapered raceway surface
- A retainer(17, fig 1)
- The protrusion is placed in a place having an interval from the retainer in an axial direction of the outer ring
- A gap in the axial direction between the protrusion and the retainer

Nunotani does not disclose:

- Said protrusion that protrudes radially inward of an end portion on a minor diameter side of the tapered raceway surface of the outer ring

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide:

- Said protrusion that protrudes radially inward of an end portion on a minor diameter side of the tapered raceway surface of the outer ring

since it has been held that a mere reversal of the essential working parts of a device involves only routine skill in the art. *In re Einstein*, 8 USPQ 167.

Re clm 6, Nunotani further does not disclose:

- Said gap being not greater than 3 mm

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide:

- Said gap being not greater than 3 mm

since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Re clm 7, Nunotani further discloses:

- The outer ring and the shield plate are integrally formed

9. Claims 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nunotani et al USP 4919551 as applied to claim 8 above.

Nunotani discloses all the claimed subject matter as described above.

Nunotani further discloses:

- The rolling elements are tapered rollers (fig 1)



- A major diameter side of the tapered rollers facing toward an oil outflow side (fig 1)

Nunotani does not disclose:

- Assuming that a number of the tapered rollers is  $z$ , a mean diameter of the tapered rollers is  $DW$  and a pitch circle diameter of the tapered roller is  $dm$ , the device comprises an arrangement structure in which the  $z$  tapered rollers that satisfies the following expression:  $z \leq 0.85/(DW(\pi \cdot dm))$  are arranged between the inner ring and the outer ring

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide:

- Assuming that a number of the tapered rollers is  $z$ , a mean diameter of the tapered rollers is  $DW$  and a pitch circle diameter of the tapered roller is  $dm$ , the device comprises an arrangement structure in which the  $z$  tapered rollers that satisfies the following expression:  $z \leq 0.85/(DW(\pi \cdot dm))$  are arranged between the inner ring and the outer ring

since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

10. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nunotani et al USP 4919551 as applied to claims 9 and 10 above, respectively, and further in view of Hiromasa JP9177796

Nunotani discloses all the claimed subject matter as described above.

Nunotani does not disclose:

- At least on of an end surface on the major diameter side of the tapered rollers and an end surface of a flange portion that is provided on a major diameter side of a tapered raceway surface of the inner ring and brought in contact with the end surface on the major diameter side of the tapered rollers is coated with a hard coating

Hiromasa discloses:

- At least on of an end surface on the major diameter side of the tapered rollers and an end surface of a flange portion (3a) that is provided on a major diameter side of a tapered raceway surface of the inner ring and brought in contact with the end surface on the major diameter side of the tapered rollers is coated with a hard coating (abs)

for the purpose of reducing the roughness of an end face of a roller and the roller bearing achieves the 'breaking-in' from the beginning of the operation to prevent the vibration due to the sticking between the end face of the roller and the inner sides (abs).

11. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-140870 as applied to claim 14 above, and further in view of Yamamoto US 20030198417.

JP '870 discloses all the claimed subject matter as described above.

JP '870 does not disclose:

- At least one of the raceway surfaces of the inner ring and the outer ring and the balls is coated with a hard coating

Yamamoto teaches:

- At least one of the raceway surfaces of the inner ring and the outer ring and the balls is coated with a hard coating ([0113])

for the purpose of improving the wear resistance of the rolling element ([0113]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of JP '870 and provide:

- At least one of the raceway surfaces of the inner ring and the outer ring and the balls is coated with a hard coating

for the purpose of improving the wear resistance of the rolling element.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALAN B. WAITS whose telephone number is (571)270-3664. The examiner can normally be reached on Monday through Friday 7:30 am to 5 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on 571-272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alan B Waits/  
Examiner, Art Unit 3656

/Richard WL Ridley/  
Supervisory Patent Examiner, Art Unit 3656